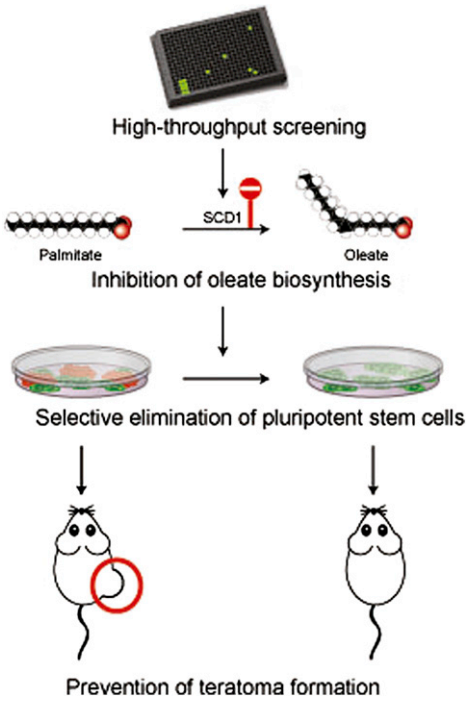
Cell Stem Cell

In This Issue



Mechanisms that Regulate Stem Cell Aging and Life Span

This review discusses several mechanisms that contribute to age-related decline in stem cell function, including gate-keeping tumor suppressor expression, DNA damage, changes in cellular physiology, and environmental changes in tissues.

Bulls-Eye: Selectively Killing PSCs

A high-throughput screen identifies a specific role for oleate metabolism in human pluripotent cells, and a selective small-molecule-based route for their elimination. The screen was performed as part of a public private partnership, a type of arrangement discussed more broadly in a Forum article by Mahendra Rao. (Top image.)

H2A.Z Controls Access to Chromatin during ESC Differentiation

H2A.Z enrichment at promoters and enhancers in ESCs alters nucleosome structure to facilitate chromatin targeting by both activating and repressing complexes. Preview by Pandey and Dou.

Targeting the SWItch for Epidermal Fate

Actin-like ACTL6a/BAF53A, a regulatory subunit of the SWI/SNF complex, prevents KLF4-induced differentiation of epidermal progenitors. Preview by Perdigoto et al.

Reversing Age-Related Cognitive Decline with Wnt

Expression of the Wnt antagonist *Dkk1* in the brain increases with age. Preventing that increase through *Dkk1* deletion enhances hippocampal neurogenesis and improves memory and behavioral characteristics, counteracting age-related cognitive decline. Preview by Wu and Hen. (Bottom image.)

Neurogenesis and the Niche

Frizzled-related protein 3, a Wnt inhibitor, is secreted by granule neurons to maintain quiescence of hippocampal neural stem cells. Neuronal activity promotes its downregulation and stimulates neurogenesis. Preview by Wu and Hen.

Chromatin Maps of Pancreatic Differentiation

Genome-wide analysis of pancreatic differentiation of hESCs reveals dynamic regulation of chromatin changes by Polycomb proteins and highlights differences between the resulting cells and human islets that may be useful for improving in vitro differentiation.

TALENs for Making Disease Models

TALENs can be used to rapidly and efficiently generate mutant alleles of 15 genes in cultured somatic cells or human pluripotent stem cells, which upon differentiation demonstrate phenotypes directly linked to a variety of diseases.

iPSCs for Myelination Disease

Oligodendrocyte progenitors derived from human iPSCs can improve function and survival in mice with a myelination defect, suggesting that autologously derived cells could be used to treat human myelination diseases.